WE CLAIM:

1. A fuel processing system, comprising:

a fuel processor having a reforming region and adapted to produce a product stream containing hydrogen gas from a feed stream; and

a feedstock delivery system adapted to deliver a feed stream containing a predetermined mix ratio of feedstock components to the fuel processor, the feedstock delivery system comprising:

a water delivery assembly adapted to provide a stream containing water;

a carbon-containing feedstock delivery assembly adapted to provide a stream containing a carbon-containing feedstock; and

a reservoir adapted to receive a volume of water and a volume of carbon-containing feedstock from the water and the carbon-containing feedstock delivery assemblies;

a sensor assembly associated with the reservoir and adapted to detect at least one triggering event related to the quantity of one or more of the feedstock components in the reservoir; and

wherein the feedstock delivery system is adapted to regulate the flow of the streams containing the water and the carbon-containing feedstock at least partially in response to the detection of the at least one triggering event by the sensor assembly to produce a feed stream containing a predetermined mix ratio of the water and the carbon-containing feedstock.

2. The fuel processing system of claim 1, wherein the sensor assembly is adapted to detect a first triggering event related to the quantity of a first one of the water or the carbon-containing feedstock delivered to the reservoir, and a second triggering event related to the quantity of either a second one of the water or the carbon-containing feedstock or the total amount of water and carbon-containing feedstock delivered to the reservoir.

3. The fuel processing system of claim 2, wherein each of the triggering events includes a measurable event in which a predetermined threshold value or range of values representative of a predetermined amount of one or more of the water, the carbon-containing feedstock, or the total liquid in the reservoir is reached or exceeded.

4. The fuel processing system of claim 1, wherein the sensor assembly is adapted to detect a first triggering event related to the quantity of a first one of the water or the carbon-containing feedstock present in the reservoir, and a second triggering event related to the quantity of either a second one of the water or the carbon-containing feedstock or the total amount of water and carbon-containing feedstock present in the reservoir.

5. The fuel processing system of claim 4, wherein each of the triggering events includes a measurable event in which a predetermined threshold value or range of values representative of a predetermined amount of one or more of the water, the carbon-containing feedstock, or the total liquid in the reservoir is reached or exceeded.

6. The fuel processing system of claim 1, wherein the feedstock delivery system is adapted to produce a feed stream containing a stoichiometric mix ratio of water to carbon-containing feedstock.

7. The fuel processing system of claim 6, wherein the feedstock delivery system is adapted to produce a feed stream containing greater than a stoichiometric mix ratio of water to carbon-containing feedstock.

8. The fuel processing system of claim 6, wherein the feedstock delivery system is adapted to produce a feed stream containing 10-50% more water than a stoichiometric mix ratio of water to carbon-containing feedstock.

9. The fuel processing system of claim 6, wherein the feedstock delivery system is adapted to produce a feed stream containing at least approximately 100% more water than a stoichiometric mix ratio of water to carbon-containing feedstock.

10. The fuel processing system of claim 1, wherein the sensor assembly includes at least one sensor external the reservoir.

11. The fuel processing system of claim 1, wherein the sensor assembly includes at least one sensor internal the reservoir.

12. The fuel processing system of claim 1, wherein the sensor assembly includes at least one sensor located partially within the reservoir and partially external the reservoir.

13. The fuel processing system of claim 1, wherein the sensor assembly includes at least one gravimetric sensor.

14. The fuel processing system of claim 1, wherein the sensor assembly includes at least one volumetric sensor.

15. The fuel processing system of claim 1, wherein the sensor assembly includes at least one physical property sensor adapted to measure at least one physical property of liquid in the reservoir.

16. The fuel processing system of claim 15, wherein the physical property sensor includes a refractive index sensor.

17. The fuel processing system of claim 15, wherein the physical property sensor includes a densitometer.

18. The fuel processing system of claim 15, wherein the physical property sensor includes a viscometer.

19. The fuel processing system of claim 15, wherein the physical property sensor includes a spectrophotometer.

20. The fuel processing system of claim 15, wherein the physical property sensor includes an electrical conductivity sensor.

21. The fuel processing system of claim 1, wherein the reservoir includes at least one partition adapted to segregate the reservoir into at least two regions, and further wherein the sensor assembly includes at least one sensor adapted to detect the volume of liquid in each region.

22. The fuel processing system of claim 21, wherein at least one of the regions includes a neck having a reduced cross-sectional area compared to the rest of the region.

23. The fuel processing system of claim 22, wherein the sensor assembly is adapted to detect the volume of liquid in the neck of the at least one region that includes a neck having a reduced cross-sectional area.

24. The fuel processing system of claim 22, wherein the reservoir includes at least two regions that each include a neck having a reduced cross-sectional area compared to the rest of the region.

25. The fuel processing system of claim 1, wherein the reservoir has a capacity and includes a vent assembly adapted to contain liquid exceeding the capacity of the reservoir and to deliver the liquid exceeding the capacity of the reservoir to a containment structure.

26. The fuel processing system of claim 1, wherein the reservoir includes a mixing device adapted to promote mixing of the carbon-containing feedstock and the water in the reservoir.

27. The fuel processing system of claim 1, wherein the system further includes a second reservoir adapted to receive the feed stream from the reservoir prior to delivery of the feed stream to the fuel processor.

28. The fuel processing system of claim 27, wherein the second reservoir includes a second sensor assembly associated with the second reservoir and adapted to detect at least one triggering event related to the quantity of the feed stream in the second reservoir.

29. The fuel processing system of claim 27, wherein the second reservoir includes a mixing device adapted to promote mixing of the carbon-containing feedstock and the water in the feed stream.

30. The fuel processing system of claim 1, wherein the carbon-containing feedstock is selected to be soluble in water.

31. The fuel processing system of claim 1, wherein the carbon-containing feedstock is selected to form an emulsion with water.

32. The fuel processing system of claim 31, wherein the carbon-containing feedstock further includes a surfactant.

33. The fuel processing system of claim 31, wherein the reservoir includes an emulsion-producing device adapted to produce an emulsion of the water and the carbon-containing feedstock.

34. The fuel processing system of claim 1, wherein the feedstock delivery system further includes a controller adapted to regulate the flow of the streams into the reservoir at least partially in response to triggering events detected by the sensor assembly.

35. The fuel processing system of claim 34, wherein the controller is a computerized controller.

36. The fuel processing system of claim 34, wherein the controller is adapted to monitor selected operating parameters of the fuel processing system and to regulate the operation of the feedstock delivery system at least partially in response thereto.

37. The fuel processing system of claim 36, wherein the operating parameters include elapsed time after at least one of the water or the carbon-containing feedstock begins to be delivered to the reservoir.

38. The fuel processing system of claim 34, wherein the feedstock delivery system includes a plurality of flow-regulating devices, and further wherein the controller is adapted to control the operation of the flow-regulating devices at least partially in response to triggering events detected by the sensor assembly.

39. The fuel processing system of claim 38, wherein each of the triggering events includes a measurable event in which a predetermined threshold value or range of values representative of a predetermined amount of one or more of the water, the carbon-containing feedstock, or the total liquid in the reservoir is reached or exceeded.

40. The fuel processing system of claim 35, wherein the controller includes a memory portion adapted to store a plurality of predetermined threshold values corresponding to a predetermined mix ratio of water and carbon-containing feedstock.

41. The fuel processing system of claim 40, wherein the controller includes a memory portion adapted to store a second plurality of predetermined threshold values corresponding to a second predetermined mix ratio of water and carbon-containing feedstock.

42. The fuel processing system of claim 34, wherein the feedstock delivery system further includes a user interface in communication with the controller, and further wherein the controller is adapted to regulate the flow of the streams into the reservoir at least partially in response to user inputs to the user interface.

43. The fuel processing system of claim 42, wherein the user interface is adapted to receive user inputs selecting the predetermined mix ratio.

44. The fuel processing system of claim 43, wherein the controller is adapted to display to the user via the user interface a plurality of predetermined mix ratios and to receive a user input selecting one of the plurality of predetermined mix ratios.

45. The fuel processing system of claim 1, wherein the reforming region is adapted to produce a mixed gas stream containing hydrogen gas and other gases from the feed stream and the fuel processor further includes a separation region adapted to separate the mixed gas stream into a product stream containing at least substantially pure hydrogen gas and a byproduct stream containing at least a substantial portion of the other gases.

46. The fuel processing system of claim 45, wherein the separation region includes at least one hydrogen-selective metal membrane.

47. The fuel processing system of claim 46, wherein the separation region includes a plurality of generally planar hydrogen-selective metal membranes.

48. The fuel processing system of claim 46, wherein the separation region includes at least one tubular hydrogen-selective metal membrane.

49. The fuel processing system of claim 45, wherein the separation region is in fluid communication with a polishing catalyst bed including a methanation catalyst.

50. The fuel processing system of claim 1, further comprising a fuel cell stack adapted to receive at least a portion of the product hydrogen stream and to produce an electric current therefrom.

51. The fuel processing system of claim 50, further comprising at least one energy-consuming device adapted to draw at least a portion of the electric current produced by the fuel cell stack.

52. A fuel processing system, comprising:

a fuel processor adapted to produce a product stream containing hydrogen gas from a feed stream; and

a feedstock delivery system adapted to deliver a feed stream containing a predetermined mix ratio of feedstock components to the fuel processor, the feedstock delivery system comprising:

a water delivery assembly adapted to provide a stream containing water;

a carbon-containing feedstock delivery assembly adapted to provide a stream containing a carbon-containing feedstock;

a reservoir adapted to receive a volume of water and a volume of carbon-containing feedstock from the water and the carbon-containing feedstock delivery assemblies; and

means for producing a feed stream containing a predetermined mix ratio of the water and the carbon-containing feedstock.

53. The fuel processing system of claim 52, wherein the means for producing are adapted to produce a feed stream containing a stoichiometric mix ratio of water to carbon-containing feedstock.

54. The fuel processing system of claim 53, wherein the means for producing are adapted to produce a feed stream containing a greater than a stoichiometric mix ratio of water to carbon-containing feedstock.

55. The fuel processing system of claim 53, wherein the means for producing are adapted to produce a feed stream containing at least 10% greater water than a stoichiometric mix ratio of water to carbon-containing feedstock.

56. The fuel processing system of claim 53, wherein the means for producing are adapted to produce a feed stream containing at least 50% greater water than a stoichiometric mix ratio of water to carbon-containing feedstock.

57. The fuel processing system of claim 53, wherein the means for producing further includes means for detecting the occurrence of at least one triggering event related to the quantity of one or more of the feedstock components in the reservoir.

58. The fuel processing system of claim 57, wherein the means for detecting are adapted to detect a first triggering event related to the quantity of a first one of the water or the carbon-containing feedstock delivered to the reservoir, and a second triggering event related to the quantity of either a second one of the water or the carbon-containing feedstock or the total amount of water and carbon-containing feedstock delivered to the reservoir.

59. The fuel processing system of claim 57, further including means for controlling the operation of the fuel processing system at least partially in response to the detection of the at least one triggering event.

60. The fuel processing system of claim 52, wherein the carbon-containing feedstock is adapted to form an emulsion with the water, and the reservoir includes means for producing an emulsion from the water and the carbon-containing feedstock.

61. A batch method for producing a feed stream for a fuel processor, the method comprising:

delivering a first feedstock component until a sensor assembly detects the occurrence of a first triggering event corresponding to a predetermined amount of the first feedstock component;

delivering a second feedstock component until a sensor assembly detects the occurrence of a second triggering event corresponding to at least one of a predetermined amount of the second feedstock component and a predetermined property of a mixture of the first and the second feedstock components;

delivering the first and the second feedstock components as a feed stream to a fuel processor containing a reforming region; and

producing a product hydrogen stream containing hydrogen gas from the feed stream.

62. The method of claim 61, wherein the method further includes the step of mixing the first and the second feedstock components prior to delivering the first and the second feedstock components as a feed stream to the fuel processor.

63. The method of claim 62, wherein the method further includes the step of forming an emulsion from the first and the second feedstock components prior to delivering the first and the second feedstock components as a feed stream to the fuel processor.

64. The method of claim 62, wherein prior to delivering the first and the second feedstock components as a feed stream to the fuel processor, the method further includes the step of delivering the first and second components to a reservoir.

65. The method of claim 64, wherein prior to delivering the first and the second feedstock components as a feed stream to the fuel processor, the method further includes the step of delivering the first and second components to a second reservoir.

66. A method for producing hydrogen gas, comprising:

delivering a first feedstock component to a mixing chamber including a sensor assembly adapted to detect at least a first and second predetermined triggering event, until the sensor assembly detects the first triggering event;

delivering a second feedstock component to the mixing chamber until the sensor assembly detects the second triggering event, wherein the first and the second feedstock components produce a feed stream containing a predetermined mix ratio of the first and the second feedstock components; and

delivering at least a portion of the feed stream to a fuel processor having a reforming region and adapted to produce a product stream containing hydrogen gas from the feed stream.